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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,880	06/05/2006	Tatsuo Kataoka	1217-052989	1955
28289	7590	02/07/2008		
THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219			EXAMINER CHEN, XIAOLIANG	
			ART UNIT 2841	PAPER NUMBER
			MAIL DATE 02/07/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/581,880

Applicant(s)

KATAOKA ET AL.

Examiner

XIAOLIANG CHEN

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group I, Claims 1-8, in the reply filed on 01-03-2008 is acknowledged.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US6071597) in view of Mahdavi (US20050003673) and Ogasawara et al. (US5044073).

Re claim 1, Yang et al. show and disclose

A process for manufacturing a printed wiring board, which process comprises

preparing a laminated film comprising an insulating film (2, fig. 9) and a conductive metal layer (10) provided on at least one surface of the insulating film with a sputtered metal layer (8) in between, selectively etching (plating resist laminating, resist exposing, developing, and etching [col. 16, line 10]) the conductive metal layer and the sputtered metal layer of the laminated film to produce a wiring pattern (fig. 9),

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Yang et al. does not disclose

1) treating the laminated film with a first treatment liquid capable of dissolving nickel of the sputtered metal layer, and treating with a second treatment liquid capable of dissolving chrome of the sputtered metal layer,

2) the second treatment liquid also capable of eliminating the sputtered metal layer in the insulating film to remove a superficial surface of the insulating film exposed from the wiring pattern together with the residual sputtered metals in the superficial surface.

Mahdavi teaches a method including

1) treating the laminated film with a first treatment liquid capable of dissolving nickel of the sputtered metal layer (A wet etch having a nickel soluble compound [0025]), and treating with a second treatment liquid (wet etch [0026]) capable of dissolving chrome of the sputtered metal layer (chrome etch [0026]),

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the treatment liquids as taught by Mahdavi to treat the device of Yang et al., in order to etch the metal layer of nickel and chrome more efficiently.

Ogasawara et al. teaches a method including

2) the second treatment liquid also capable of eliminating the sputtered metal layer in the insulating film to remove a superficial surface of the insulating film exposed from the wiring pattern together with the residual sputtered metals in the superficial surface. (This etching dissolves a thin surface layer of the resin

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board and removes residual chemicals from the resin board. This etching can be accomplished by the aid of any solvent which dissolves the resin board. [col. 2, line 50]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the etching solvent as taught by Ogasawara et al. to the second treatment liquid of Yang et al., in order to make the device more reliable by eliminating the sputtered metal spots left after the device is treated with the second treatment liquid.

Re claim 2, Yang et al. show and disclose

The process according to claim 1, wherein the insulating film is a polyimide film (polyimide film [col.6, line 19]).

Re claim 3, Yang et al. show and disclose

The process according to claim 1, wherein the sputtered metal layer comprises nickel and/or chrome (selected from the group consisting of silicon, oxygen, nitrogen, sulfur, titanium, chromium, copper, fluorine and nickel [claim 9]).

Re claim 4, Yang et al. show and disclose

The process according to claim 1, wherein a surface of the insulating film, which comprises a polyimide film (polyimide film [col.6, line 19]),

Yang et al. discloses the claimed invention except for the exposed from the wiring pattern is removed to a depth of 1 to 100 nm with use of the second treatment liquid.

It was well known in the art at the time the invention was made that the depth of the etching not only depends on the etching liquid but also depends on the time of the etching and the temperature of the etching.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the second treatment liquid to etch the polyimide film for a depth of 1 to 100 nm by controlling the time and the temperature, and it was well known in the art at the time the invention was made that etching a depth range of 1 to 100 nm would be enough to eliminate the sputtered metal spots left on the surface of the insulating film.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use of the second treatment liquid to etch the polyimide film for a depth of 1 to 100 nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Re claim 5, Yang et al. show and disclose

The process according to claim 1, wherein the sputtered metal layer on the insulating film which is a polyimide film (polyimide film [col.6, line 19]) is a base metal layer comprising nickel and chrome (selected from the group of titanium, chromium, copper, fluorine and nickel [claim 9]), and wherein the conductive metal layer on the sputtered metal layer is a plated (an electroplated layer 10 of conductive material [col. 7, line 53]) copper layer (The conductive layers are typically formed from conductive metals such as tin, gold, silver, copper, chromium and the like [col. 7, line 37]).

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Re claim 6, Yang et al. show and disclose

The process according to claim 1, wherein the sputtered metal layer includes a base metal layer on the insulating film which is a polyimide film (polyimide film [col.6, line 19]), the base metal layer comprising nickel and chrome (selected from the group of titanium, chromium, copper, fluorine and nickel [claim 9]), and a sputtered copper layer (Next, sputtering of the polyimide film with a layer of chrome and copper is performed [col. 16, line 32]) on the base metal layer, and wherein the conductive metal layer on the sputtered metal layer is a plated (an electroplated layer 10 of conductive material [col. 7, line 53]) copper or copper alloy layer (The conductive layers are typically formed from conductive metals such as tin, gold, silver, copper, chromium and the like [col. 7, line 37]).

Re claim 7, Yang et al. show and disclose

The process according to claim 1, wherein the process further comprises plating (The copper side of the laminate is then further plated to desired circuit thickness [col. 16, line 47]) the wiring pattern (desired patterns are obtained [col. 16, line 45]).

Re claim 8, Yang et al. show and disclose

The process according to claim 7, wherein the plating is selective plating (procedures such as plating resist laminating, resist exposing, developing, and plating. [col. 16, line 10]) of the conductive metal layer that forms the wiring pattern.

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**Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5130192 US 20020148733 US 20050258522

Any inquiry concerning this communication or earlier communications from the examiner should be directed to XIAOLIANG CHEN whose telephone number is (571)272-9079. The examiner can normally be reached on 7:00-5:00 (EST), Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Xiaoliang Chen *Xc*  
Examiner  
Art Unit 2841



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